Amendments to the Claims

Claims 1-13, 15-31, and 33-36 are pending in the application with claims 1 and 19 amended herein and claims 14, 32, and 37-106 cancelled herein.

1. (currently amended) A laser device comprising:

a target position;

an optical component separated a distance J from the target position;

a laser energy source separated a distance H from the optical component, distance H being greater than distance J; ~~and~~

a laser source manipulation mechanism exhibiting a mechanical resolution of positioning the laser source, the mechanical resolution being less than a spatial resolution of laser energy at the target position as directed through the optical component; and

at least one desorbed energy detection cell, the laser device being comprised by a laser desorption spectrometer.

2. (original) The device of claim 1 wherein a vertical index and a lateral index that intersect at an origin are defined for the optical component, the manipulation mechanism auto aligning laser aim through the origin during laser source motion.

3. (original) The device of claim 1 wherein the laser source manipulation mechanism comprises a mechanical index, the mechanical index comprising a pivot point for laser source lateral motion and a reference point for laser source vertical motion.

4. (original) The device of claim 1 wherein the target position is located within an adverse environment comprising at least one of a high magnetic field, a vacuum system, a high pressure system, and a hazardous zone, the laser source and an electro-mechanical part of the manipulation mechanism being located outside the adverse environment.

5. (original) The device of claim 1 wherein the target position is located within a vacuum chamber also within a high magnetic field that can hinder operation of electro-mechanical devices.

6. (original) The device of claim 1 wherein the optical component comprises a lens.

7. (original) The device of claim 1 wherein the optical component comprises multi-element optics.

8. (original) The device of claim 1 wherein the laser source comprises a virtual source, the virtual source being separated the distance H from the optical component.

9. (original) The device of claim 1 wherein the laser source can be placed in scanning motion by the manipulation mechanism.

10. (original) The device of claim 1 wherein the laser source has a lateral rotational axis during lateral motion and a vertical rotational axis during vertical motion, the lateral axis and vertical axis intersecting at an axes origin from which the laser energy emanates independent of laser source position.

11. (original) The device of claim 1 wherein the mechanical resolution comprises both lateral and vertical mechanical resolution and the spatial resolution comprises both lateral and vertical spatial resolution.

12. (original) The device of claim 1 wherein the spatial resolution approximately equals the mechanical resolution multiplied by a ratio of distance J to distance H and wherein at least one of distance H and distance J can be altered, modifying the spatial resolution.

13. (original) The device of claim 1 wherein the manipulation mechanism comprises a Peaucellier linkage.

14. (canceled).

15. (original) A laser device comprising:

a target position;

a lens separated a distance J from the target position;

a laser energy virtual source separated a distance H from the lens, distance H being greater than distance J;

a virtual source manipulation mechanism exhibiting a mechanical resolution of positioning the virtual source, the mechanical resolution being less than a spatial resolution of laser energy at the target position as directed through the lens; and

at least one desorbed energy detection cell, the laser device being comprised by a laser desorption spectrometer.

16. (original) The device of claim 15 wherein the virtual source has a lateral rotational axis during lateral motion and a vertical rotational axis during vertical motion, the lateral axis and vertical axis intersecting at an axes origin from which the laser energy emanates independent of virtual source position.

17. (original) The device of claim 15 wherein the mechanical resolution comprises both lateral and vertical mechanical resolution and the spatial resolution comprises both lateral and vertical spatial resolution.

18. (original) The device of claim 15 wherein the spatial resolution approximately equals the mechanical resolution multiplied by a ratio of distance J to distance H and wherein at least one of distance H and distance J can be altered, modifying the spatial resolution.

19. (currently amended) A laser device comprising:

an optical component having a vertical index and a lateral index that intersect at an origin;

a laser energy source aimed at the origin; ~~and~~

a laser source manipulation mechanism linking vertical and lateral laser source motion to the respective vertical and lateral indices and auto aligning laser aim through the origin during laser source motion; and

at least one desorbed energy detection cell, the laser device being comprised by a laser desorption spectrometer.

20. (original) The device of claim 19 further comprising a target position separated a distance J from the optical component, wherein the laser source is separated a distance H from the optical component greater than distance J and wherein the manipulation mechanism exhibits a mechanical resolution of displacing the laser source less than a spatial resolution of displacing laser energy at the target position.

21. (original) The device of claim 19 wherein at least one of the lateral index and vertical index comprises a line.

22. (original) The device of claim 19 wherein the optical component comprises a lens.

23. (original) The device of claim 19 wherein the optical component comprises multi-element optics.

24. (original) The device of claim 19 wherein the laser source comprises a virtual source.

25. (original) The device of claim 19 wherein the laser source can be placed in scanning motion by the manipulation mechanism.

26. (original) The device of claim 19 wherein the laser source has a lateral rotational axis during lateral motion and a vertical rotational axis during vertical motion, the lateral axis and vertical axis intersecting at an axes origin from which the laser energy emanates independent of laser source position.

27. (original) The device of claim 19 wherein the lateral laser source motion is physically linked to the lateral index.

28. (original) The device of claim 19 wherein the vertical laser source motion is physically linked to the vertical index.

29. (original) The device of claim 19 wherein the manipulation mechanism comprises an approximate center of lateral pivot for laser source motion approximately coincident with the lateral index and an approximate center of vertical pivot for laser source motion approximately coincident with the vertical index.

30. (original) The device of claim 19 wherein the manipulation mechanism comprises a mechanical gimbal.

31. (original) The device of claim 19 wherein the manipulation mechanism comprises a virtual gimbal.

32. (canceled).

33. (original) A laser device comprising:

a lens having a vertical index and a lateral index that intersect at an origin;

a laser energy virtual source aimed at the origin;

a virtual source manipulation mechanism linking vertical and lateral virtual source motion to the respective vertical and lateral indices and auto aligning laser aim through the origin during virtual source motion; and

at least one desorbed energy detection cell, the laser device being comprised by a laser desorption spectrometer.

34. (original) The device of claim 33 wherein the virtual source has a lateral rotational axis during lateral motion and a vertical rotational axis during vertical motion, the lateral axis and vertical axis intersecting at an axes origin from which the laser energy emanates independent of laser source position.

35. (original) The device of claim 33 wherein the lateral and vertical virtual source motion is physically linked to the respective lateral and vertical indices.

36. (original) The device of claim 33 wherein the manipulation mechanism comprises an approximate center of lateral pivot for virtual source motion approximately coincident with the lateral index and an approximate center of vertical pivot for virtual source motion approximately coincident with the vertical index.

Claims 37-106 (cancelled).